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**THORNE FARM
RAMSGATE
KENT**

**GEOPHYSICAL SURVEY
REPORT**

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LIGHTSOURCE RENEWABLE ENERGY LIMITED

THORNE FARM

RAMSGATE, KENT

**GEOPHYSICAL SURVEY
REPORT**

PREPARED BY:

Martin Railton

Senior Project Manager



APPROVED BY:

Frank Giecco

Technical Director



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SUMMARY

In September 2013 Wardell Armstrong Archaeology undertook a geophysical survey of land adjacent to Thorne Farm, Thorne Hill, near Ramsgate in Kent. The survey was undertaken for Lightsource Renewable Energy Limited, to provide information in support of a planning application for a solar development at the site.

Previous archaeological investigations have identified archaeological remains to the north of the site, including activity dating to the prehistoric, Romano-British and medieval periods. The most significant features detected by the geophysical survey comprise two possible ring ditches or small enclosures of likely prehistoric or Romano-British, one of which falls within the northwest corner of the proposed development area.

The objective of the geophysical surveys was to determine the presence/absence, nature and extent of potential archaeological features within the study area, and the presence/absence of any known modern features within the survey area, which may affect the results.

Geomagnetic surveys covering *c.*23ha of land was conducted within a pastoral field to the north of Thorne Farm. A series of modern features were detected along the north side of the survey area, including a gas pipeline and drain with associated inspection covers. The remains of medieval ridge and furrow cultivation of likely medieval or post-medieval date was also detected across the whole of the study area.

The most significant features detected by the geophysical survey comprised two possible ring ditches or small enclosures of likely prehistoric or Romano-British, one of which falls within the northwest corner of the proposed development area.

A number of probable post-medieval features were also detected, a number of which are located within the proposed development area. These include a number of possible chalk pits or ponds, a possible former field boundary and a former trackway or road, which is depicted Thanet Tithe Map of *c.*1840 connecting Thorne Farm to the south with the Ridgeway to the north. A number of other undated possible soil-filled features have been detected, some of which may relate to the agricultural use of the site.

Given the archaeological potential of the site it is recommended that the results of the geophysical surveys are tested through the excavation of a series of trial trenches across the site, targeting both the geophysical anomalies detected, and also testing areas apparently devoid of archaeological features, the nature and extent of which would need to be agreed with the Senior Archaeological Officer at Kent County Council.

ACKNOWLEDGEMENTS

Wardell Armstrong Archaeology would like to thank Sam Clarke of Wardell Armstrong LLP, for commissioning the project, and for all assistance throughout the project.

Wardell Armstrong Archaeology would also like to extend their thanks to Met Geo Environmental, for their assistance during the fieldwork.

The project was managed by Martin Railton BA (Hons) MA MifA, Project Manager for WAA. The report was written and illustrated by Martin Railton.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT (FIGURE 1)

- 1.1.1 Between 9th and 19th September Wardell Armstrong Archaeology undertook geophysical surveys of land adjacent to Thorne Farm, Thorne Hill, near Ramsgate in Kent. The survey was undertaken for Lightsource Renewable Energy Limited, to provide information in support of a planning application for a solar development at the site. The archaeological work was undertaken in accordance with Wardell Armstrong Archaeology project design (Railton 2013), which was submitted to, and approved by Wendy Rogers, Senior Archaeological Officer at Kent County Council. This is in line with government advice as set out in Section 12 of the National Planning Policy Framework (NPPF 2012).
- 1.1.2 The study area comprised an arable field to the north of Thorne Farm immediately to the south of Canterbury Road (A299) and Kent's International Airport (Figure 1). The site is centred on Ordnance Survey grid reference TR 3330 6529, and measured approximately 23.6ha in total.
- 1.1.3 It was believed that archaeological remains could survive at the site, including potential prehistoric, Romano-British and medieval activity. In particular, during the early 1980s, a gas pipeline was constructed within and parallel to the northern boundary of the site, which was subject to archaeological monitoring. Within the northwest corner of the site a spread of material indicative of settlement activity was recorded, which included burnt flint, shells, bones and Iron Age pottery (HER reference TR 36 NW 185). To the east of this three graves, two of which were dated to the Anglo Saxon period, were recorded within the site boundary (HER reference TR 36NW 186). Further to the east a series of inhumations and cremations dated to the Roman period were recorded (HER reference TR 36 NW 187). In the northeast corner of the site the gas pipeline trench was observed to cut a V-shaped ditch which contained Romano-British pottery within its fill (HER reference TR 36 NW 188). There is therefore the potential for further archaeological features to extend southwards into the proposed development area.
- 1.1.4 The objective of the geophysical survey was to determine the presence/absence, nature and extent of potential archaeological features within the survey area, and the presence/absence of any known modern features within the survey area, which may affect the results.
- 1.1.5 This report outlines the results of the geophysical surveys undertaken, and includes an interpretation of the geophysical survey results, in light of the archaeological and historical background of the site, with recommendations for further work where necessary. A separate report will present the results of a programme of field walking, which is being undertaken at the site.

2 METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 A project design was submitted by Wardell Armstrong Archaeology in response to a request by Wardell Armstrong LLP, for a geophysical survey of the study area. Following acceptance of the project design by Wendy Rogers, Senior Archaeological Officer at Kent County Council, Wardell Armstrong Archaeology was commissioned by the client to undertake the work. The project design was adhered to in full, and the work was consistent with English Heritage guidelines (English Heritage 2007 and 2008), and in accordance with the standard and guidance of the Institute for Archaeologists (IfA 2011).

2.2 GEOPHYSICAL SURVEYS

2.2.1 *Technique Selection:* geomagnetic survey was selected as the most appropriate technique, given the non-igneous environment, and the expected presence of cut archaeological features at depths of no more than 1.5m. This technique involves the use of hand-held gradiometers, which measure variations in the vertical component of the earth's magnetic field. These variations can be due to the presence of sub-surface archaeological features. Data were recorded by the instruments and downloaded into a laptop computer for initial data processing in the field using specialist software.

2.2.2 *Field Methods:* the geophysical study area measured 23.6ha in total. A 30m grid was established across the site, and tied-in to known Ordnance Survey points using a total station with datalogger.

2.2.3 Geomagnetic measurements were determined using a Bartington Grad601-2 dual gradiometer system, with twin sensors set 1m apart. It was expected that significant archaeological features at a depth of up to 1.5m would be detected using this arrangement. The survey was undertaken using a zig-zag traverse scheme, with data being logged in 30m grid units. A sample interval of 0.25m was used, with a traverse interval of 1m, providing 3600 sample measurements per grid unit, with measurements being recorded at the centre of each grid cell. The data were downloaded on site into a laptop computer for processing and storage.

2.2.4 *Data Processing:* geophysical survey data were processed using Geoplot software, which was used to produce 'grey-scale' images of the raw data. Positive magnetic anomalies are displayed as dark grey, and negative magnetic anomalies are displayed as light grey. A palette bar shows the relationship between the grey shades and geomagnetic values in nT.

2.2.5 Raw data were processed in order to further define and highlight the archaeological features detected. The following basic data processing functions were used:

Despike: to locate and suppress random iron spikes in the gradiometer data.

Clip: to clip data to specified maximum and minimum values, in order to limit large noise spikes in the geophysical data.

Zero mean traverse: to reduce the effect of striping in the gradiometer data, sometimes caused by misalignment of the twin sensors;

Interpolate: to match the traverse and sample intervals in the gradiometer data.

2.2.6 **Interpretation**: three types of geophysical anomaly were detected in the gradiometer data:

positive magnetic: regions of anomalously high or positive magnetic data, which may be associated with the presence of high magnetic susceptibility soil-filled features, such as pits or ditches.

negative magnetic: regions of anomalously low or negative magnetic data, which may be associated with features of low magnetic susceptibility, such as stone-built features, geological features, land-drains or sub-surface voids.

dipolar magnetic: regions of paired positive and negative magnetic anomalies, which typically reflect ferrous or fired materials, including fired/ferrous debris in the topsoil, modern services, metallic structures, or fired structures, such as kilns or hearths.

2.2.7 **Presentation**: the grey-scale images were combined with site survey data and Ordnance Survey data to produce the geophysical survey figures. Colour-coded geophysical interpretation diagrams are provided, showing the locations and extent of positive, negative and dipolar geomagnetic anomalies.

2.2.8 An archaeological interpretation diagram is also provided, which is based on the interpretation of the geophysical survey results, in light of the archaeological and historical background of the site. Potential archaeological features are numbered on these figures.

2.2.9 A1 plots of the raw unprocessed data will be included with the project archive and are available upon request.

2.3 ARCHIVE

2.3.1 The data archive for the geophysical survey has been created in accordance with the recommendations of the Archaeology Data Service (ADS 2013). This archive is currently held at the company offices at Carlisle, Cumbria.

2.3.2 One copy of the final report will be deposited with the County Historic Environment Record, where viewing will be available on request. The project is also registered with the Online Access to the Index of archaeological investigationS (OASIS), where a digital copy of the report will be made available.

2.3.3 The OASIS reference for this project is **northpen3-159663**.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

- 3.1.1 Thorne Farm lies approximately 6km to the west of Ramsgate within the Isle of Thanet, which lies at the most easterly point of Kent. While in the past it was separated from the mainland by the wide River Wantsum, it is no longer an island. Land heights slope from a maximum height of 50m AOD along the northern boundary of the site to a minimum of 35m AOD along the southern site boundary.
- 3.1.2 The underlying geology at the site comprises Margate Chalk Member. This sedimentary bedrock was formed approximately 71 to 86 million years ago in the Cretaceous Period (BGS 2001).
- 3.1.3 Historic Landscape Characterisation (HLC) defines the study area as post-medieval informal enclosure. It is located within the Isle of Thanet Character Area, which is recorded as being an area of fields bound by trackways, a character type common to Thanet.

3.2 HISTORICAL CONTEXT

- 3.2.1 **Introduction:** an Archaeology and Cultural Heritage Assessment is being undertaken by Wardell Armstong LLP (Dawson 2013), a summary of which is included below. The historical background is compiled mostly from secondary sources, and is intended only as a brief summary of historical developments specific to the study area. References to the Kent Historic Environment Record (HER) are included where known.
- 3.2.2 **Prehistoric (up to c.43 AD):** the earliest evidence for activity in the area comprises the recovery of nine early Palaeolithic handaxes from Thanet. However, there is no evidence for Middle or Upper Palaeolithic activity (Moody 2008 & Scott 2010). Evidence for Mesolithic activity is also sparse, but recent work undertaken ahead of the construction of the East Kent Access Road has recovered Mesolithic tranchet axes and worked flint (Oxford & Wessex Archaeology 2011).
- 3.2.3 A causewayed enclosure has been recorded at Ramsgate to the east of the site, and Neolithic flints have been recorded to the southwest of the site (HER TR 36 SW 100). By the Bronze Age period Thanet's coastal location proved ideal for sea trade with other coastal communities of Britain and mainland Europe. By the end of the Bronze Age Thanet was of paramount importance essentially providing a gateway between the Continent and the rest of Kent (Yates 2010).
- 3.2.4 Known Bronze Age activity was recorded c.30-40m north of the site prior to the construction of the East Kent Access Road. This comprised an enclosure with possible ritual associations, and a pit was recorded c.10m north of the site. Slightly further afield but still in the vicinity of the site the HER records a

- possible Bronze Age settlement 1km to the north (HER TR 36 NW 226). In addition potential Bronze Age funerary activity is attested to by possible barrows located 450m east, 670m west, 680m west and 900m west of the site boundary (TR 36 NW 34, TR 36 NW 179, TR 36 NW 241 and TR 36 NW 178).
- 3.2.5 Thanet is believed to have been one of the most densely populated parts of Kent during the early Iron Age (700-300 BC). Although the middle Iron Age (300-150 BC) appears to have witnessed a decline in population, by the end of the period (150 BC – 43 AD) population levels appear to have increased again with occupation being more widespread and by now supported by coinage (Parfitt 2010). When Julius Caesar visited Thanet he recorded a landscape of farmsteads inhabited by people with coinage (Andrews 2010).
- 3.2.6 The ridgeway, located to the north of the site boundary, is likely to have been a routeway during this period. It probably provided access between upland settled areas of Thanet, where livestock farming and grain production dominated, to the landing places on the coasts. Moody refers to a likely network of trade routes and droveways some of which were metalled (Moody 2008). As indicated by the fieldwork undertaken ahead of the construction of the East Kent Access road, smaller trackways are likely to have branched off the ridgeway into the boundary of the site (Dawson 2013).
- 3.2.7 As well as the Iron Age occupation site, recorded 35m north of the site boundary during the installation of a gas pipeline in the 1980s (HER TR 36 NW 185), other known sites are recorded on the HER. These include cropmark enclosures recorded 80m west of the site (Ref. 1004203). A known settlement site is also recorded 680m east of the site (HER TR 36 NW 190) and 1km north of the site (HER TR 36 NW 226).
- 3.2.8 **Romano-British (c.43 to c.410AD):** The Roman invasion of Britain is reputed by many to have landed first at Richborough, a defensible outcrop on the opposite side of the Wantsum Channel, approximately 5km south of the site. The name Thanet is reputed to derive from the presence of a beacon or lighthouse, placed on Thanet during this period to mark the approach to Richborough (Glover 1982).
- 3.2.9 Romano-British occupation within the vicinity of the site boundary has been attested to by finds and features indicative of industrial activity (HER TR 36 NW 184 and TR 36 NW 50). In addition a Romano-British cemetery has also been recorded 30m north of the boundary of the site (HER TR 36 NW 187) and recent fieldwork has recorded the presence of a further cemetery to the north of the site (see Section 3.3 below).
- 3.2.10 **Anglo-Saxon (c.410 to 1066AD):** An Anglo Saxon estate centre was located at Minster c.1.8-2km southwest of the site and a possible meeting place may have been located 1.75km west of the site along the ridgeway at Mount Pleasant (Lawson 2010). In AD 670 a nunnery was established at Minster (Ref. 1016850). The hollow way, recorded by fieldwork to the north of the site, probably

provided access to the nunnery from the main route-way occupying the ridgeway to the north of the site. Activity alongside the hollow way has been demonstrated by the recording of Anglo Saxon cemeteries along its route, including two which extend to within the boundary of the site. Whilst the settlement associated with these cemeteries is thought to be located elsewhere (Oxford & Wessex Archaeology 2011) it is possible that Thorne Farm, 330m south of the site (HER MKE86972), may have had early origins, potentially as early as the Saxon period (Quested 1996).

- 3.2.11 **Medieval (c.1066 to c.1540AD):** Thorne Farm (HER MKE86972) is located on the site of a manor house, and was named as a consequence of the abundance of thorn bushes growing in its vicinity. The bushes also reputedly gave rise to the name of the family that originally resided there. In 1300 it was recorded in correspondence between the Archbishop and Vicar that Henry de Thorne was arranging mass in his private chapel at the manor which affected the mass being held at Minster (Helsted 1797-1801). Remains of the chapel are located 160m south of the site, preserved within the fabric of a later building (Ref. 1224336). The manor was later held by the family of Goshall who remained until the time of Henry IV after which through marriage it transferred it into the family of St Nicholas, the family of Dynley and then the family of Powcies (ibid).
- 3.2.12 **Post medieval and Modern (c.1540 to 1901):** By 1790 Thorne had transferred to the ownership of Mr Henry Wooton (Helsted 1797-1801). The earliest cartographic evidence studied as part of the assessment comprised the Minster in Thanet Tithe Map dated c.1840. This recorded that the land within the site boundary was owned by Mary Wooton within the Thorn Farm land holding. The land within the site was at this time located within four fields and a trackway was shown providing direct access between the farm to the ridgeway located to the north of the site. Another trackway or footpath was shown crossing the site on a northeast to southwest alignment. A chalk pit, recorded by the HER, is also shown on the map to the south of the site (HER TR 36 NW 331).
- 3.2.13 By the time of the production of the 1877 Ordnance Survey map the boundary between some of the field boundaries at the site had been removed. Consequently the site was located within two much larger fields separated by a trackway, which continued to provide access to the farm from the ridgeway to the north of the site. Subsequent editions of the Ordnance Survey showed no change within the boundary of the site until the removal at some point between 1907 and 1938 of the northeast to southwest aligned footpath/trackway, shown crossing the site on the Tithe map.
- 3.2.14 By the time of WWII an airstrip had been constructed to the immediate north of the site (HER TR 36 NW 432). This was defended during WWII by trenching and pill boxes, none of which are known to have been located within the boundary of the site. Other evidence of WWII activity comprises the crash site

of a Messerschmitt which is recorded 490m south-west of the site (HER TR 36 SW 279).

3.3 PREVIOUS ARCHAEOLOGICAL WORK

3.3.1 During the early 1980s, a gas pipeline was constructed within and parallel to the northern boundary of the site, which was subject to archaeological monitoring. A number of archaeological features were recorded, which have the potential to extend into the survey area. These comprise:

- Evidence for an Iron Age occupation; burnt flint, shells, bones and pottery sherds, which were recovered from the north of the site (HER TR 36 NW 185);
- Romano British surface and associated finds, comprising closely packed flints with slag and sherds of Belgic and Romano British pottery also recorded to the northwest of the site (HER TR 36 NW 184);
- A Romano- British ring ditch was also recorded within the northeast corner of the site (HER TR 36 NW 188);
- A late first to second century Roman occupation/industrial site comprising one ditch and seven large hollows filled with loose ash, large sherds, bone, worked bone, nails, knife blades and pieces of flint was recorded to the north of the site (HER TR 36 NW 50);
- A late first to second century Romano-British cemetery was recorded to the north of the site, east of the area of identified Iron Age/Romano-British occupation (HER TR 36 NW 187);
- Three early medieval/Saxon graves were also recorded to the north of the site (HER TR 36 NW 186).

3.3.2 In addition to these features it is known from recent fieldwork not yet incorporated onto the HER that further non-designated heritage assets are located within the boundary of the site. These include two Anglo Saxon cemeteries and road/track ways dating from the Iron Age/Roman period. An Anglo Saxon holloway may also extend into the survey area.

3.3.3 These features were identified in 2009 during the construction of the East Kent Access Road, which bounds the site to the north (Oxford-Wessex 2011). Initially the road corridor was subject to field walking, a metal detecting survey and a test pit survey. All parts of the road corridor located within undisturbed land (predominantly arable land) were then subject to an archaeologically monitored topsoil and subsoil strip after which exposed remains were mapped and characterised. Subsequently and where necessary, full excavation of remains was then undertaken. In addition, in some areas a watching brief was implemented during road construction and ordinance removal.

3.3.4 In addition excavation of a new easement for the moving of the 1980's gas pipeline was required. This easement was excavated at the same time as the

- road corridor. The easement extended to within the eastern half of the northern boundary of the site by around 5m.
- 3.3.5 The road and gas corridor was split into zones with the land to the immediate north and within the site boundary being located predominantly within Zones 19 and 20a. From observations undertaken during the installation of the gas pipeline in the 1980s these Zones were known to have been located in the vicinity of Roman and Saxon burials and Roman occupation/industrial sites.
- 3.3.6 The earliest activity recorded comprised an early Bronze Age pit (Zone 20a) c.10m north of the site boundary. A Late Bronze Age enclosure (Zone 19) was located 40-50m north of the site. This had an internal pit containing 20 sherds of Late Bronze Age pottery. Possible ritual associations to the enclosure were indicated by the find of a disarticulated human skull from a ditch terminus.
- 3.3.7 Evidence for Iron Age activity included evidence for two structures identified from post holes (Zone 19) located 30-40m north of the site. One was identified as a possible storage structure typically found in association with settlement. A metalled trackway dating to the Iron Age period was recorded to the west of these structures. This is likely to have branched off from a main routeway on the ridgeline to the north. Extrapolation of the road alignment would project the road to within the site boundary (Dawson 2013).
- 3.3.8 Two further trackways dated to the Late Iron Age/Roman period were recorded in Zone 19. As with the earlier trackway these later trackways are likely to have extended to within the boundary of the site. Another trackway dated to the Roman period was recorded through Zone 20a although extrapolation of its alignment would not place it in the site.
- 3.3.9 Two Roman cemeteries were recorded adjacent to the later trackways. These included one cemetery located 30m north of the site, which included 11 inhumations and 18 cremations. This was probably associated with HER reference TR 36 NW 187 and it is not thought that this extended any further south – i.e. within the boundary of the site. However the second cemetery which included 9 inhumations was recorded within the boundary of the site, and it is not known how far south within the site boundary this cemetery may extend (*ibid*).
- 3.3.10 A holloway, likely to be Saxon in date, was recorded in Zones 19 and 20a, again branching off the ridgeline to the north of the site. Aligned roughly east-west the holloway is unlikely to have entered the site boundary except at the western end where it may have entered across the northern boundary of the site on route to Minster where an Anglo Saxon monastery was known to be present.
- 3.3.11 Three Saxon cemeteries were also recorded, one being 25m north of the site, which is likely to be associated with HER reference TR 36 NW 186. The other two were previously unknown and were recorded on the southern limits of the excavation of the gas easement, therefore they extend within the boundary of the site. The western-most cemetery was recorded within Zone 20a and included five inhumations dated to the 6th to 7th centuries AD. Grave goods

included beads, glass, a comb, various copper alloy brooches, a spindle whorl, an iron spear head and a knife. The other cemetery recorded in the boundary of the site was located within Zone 19 and comprised 16 inhumations (*ibid*).

4 THE GEOPHYSICAL SURVEYS

4.1 INTRODUCTION (FIGURE 2)

- 4.1.1 The geophysical survey was undertaken between 9th and 19th September 2013. Geomagnetic survey was undertaken over a large arable field to the north of Thorne Farm. This area was bound by mature hedgerows and newly-planted trees. The northern boundary comprised a c.10-m-wide strip of land planted with trees, which could not be surveyed, and was delineated by an earthwork bank adjacent to the modern road.
- 4.1.2 Small discrete dipolar magnetic anomalies were detected across the whole of the study area. These are almost certainly caused by fired/ferrous litter in the topsoil, which is typical for modern agricultural land. These anomalies are indicated on the geophysical interpretation drawings, but not referred to again in the subsequent interpretations.
- 4.1.3 Numbers in the text refer to potential archaeological features (or groups of similar features) detected during the geophysical surveys. These features are labeled on the archaeological interpretation figures.

4.2 GEOPHYSICAL SURVEY (FIGURES 3-11)

- 4.2.1 A strong dipolar linear magnetic anomaly was detected crossing the northwest corner of the survey area, aligned northwest to southeast. This was almost certainly due to the presence of a modern service pipe. Another strong dipolar linear magnetic anomaly was detected running along the northern edge of the survey area, which is also believed to be a modern service pipe, possibly a gas pipeline.
- 4.2.2 A series of strong discrete dipolar magnetic anomalies were detected crossing the north side of the survey area, aligned approximately east to west, due to the presence of a series of metallic drain covers. Between these anomalies weak linear positive and negative magnetic anomalies were detected, which almost certainly represent an associated drain or service pipe.
- 4.2.3 A parallel series of positive linear magnetic anomalies was detected crossing the whole of the survey area, aligned approximately north to south, which are interpreted as the remains of ridge and furrow cultivation. These features were spaced on average c.6-7m apart and represent the soil-filled furrows of former ridge and furrow cultivation of likely medieval or post-medieval date.
- 4.2.4 A positive curvilinear magnetic anomaly was detected on the northwest side of the survey area, which is likely to represent a soil-filled ring ditch or small enclosure (1). This feature measured c.17m in diameter and appeared have an opening on the north side, which may indicate an entrance. The south side of this feature has been disturbed by the insertion of the drain or service pipe referred to in Section 4.2.2 above.

- 4.2.5 The southern portion of a second similar curvilinear positive magnetic anomaly was detected on the northern edge of the survey area to the east, which is likely to represent another soil-filled ring ditch or small enclosure (2). This feature measured *c.*21m in diameter with no obvious entrance on the south side. The north side of this feature lay outside of the survey area, and was also not clearly defined due to magnetic disturbance relating to the modern service pipe.
- 4.2.6 To the east of this feature two parallel linear positive magnetic anomalies were detected, aligned northeast to southwest, which may represent two soil-filled ditches (3). It is uncertain whether these features relate to the adjacent ring ditch/enclosure, but is possible these represent continuations of features previously identified during excavations to the north of the site.
- 4.2.7 A further linear positive magnetic anomaly was detected on the southwest side of the survey area aligned northwest to southeast, which may also represent a soil-filled ditch of unknown date (4).
- 4.2.8 A series of up to 8 discrete positive magnetic anomalies were detected, which are believed to represent soil-filled features, such as possible chalk pits or ponds (5). These measured between *c.*5m and *c.*10m in diameter, and were widely distributed across the survey area.
- 4.2.9 A linear negative magnetic anomaly was detected crossing the western central part of the survey area, aligned approximately north to south (6). This feature is parallel with a former field boundary, depicted on the Thanet Tithe Map of *c.*1840, and may represent a former field boundary bank. However, it is also possible that the anomaly represents a field drain.
- 4.2.10 A further linear positive magnetic anomaly was detected on the southeast side of the survey area aligned northwest to southeast, which may also represent a soil-filled ditch (7), similar to the feature described in Section 4.2.7 above.
- 4.2.11 A further linear positive magnetic anomaly was detected on the north side of the survey area (8), which may also represent a soil-filled ditch. The alignment of this feature suggests it may be a continuation of an archaeological feature revealed during previous excavations to the north.
- 4.2.12 Two parallel linear negative magnetic anomalies, and a linear positive magnetic anomaly, were also detected at the southeast corner of the survey area, aligned northeast to southwest, which may represent further soil-filled ditches or possibly features associated with former field boundaries (9) with which they are parallel.
- 4.2.13 A broad linear alignment of small dipolar magnetic anomalies was detected bisecting the east side of the survey area, aligned northeast to southwest. These anomalies correspond to the location of a former track way or road, which is depicted on the Thanet Tithe Map of *c.*1840 connecting Thorne Farm to the south with the Ridgeway to the north.

4.3 DISCUSSION

- 4.3.1 It is known that archaeological features of prehistoric, Romano-British and Saxon date have previously been revealed to the north of the proposed development area, and these appear to continue into the northern portion of the survey area.
- 4.3.2 In particular two possible ring ditches or small enclosures of likely prehistoric or Romano-British date have been detected on the northern edge of the survey area (1 & 2), one of which falls within the northwest corner of the proposed development area (2).
- 4.3.3 It is possible that further possible insubstantial archaeological features survive along the northern edge of the survey area, which have not been detected by the geophysical survey due to the magnetic disturbance caused by the adjacent gas pipeline/service pipe and other modern features. There has also been significant modern disturbance within the north side of the survey area, due to the insertion of a drain and a series of metal drain/inspection covers, which will have affected the results of the geophysical survey. This drain corresponds to the location of a linear cropmark identified during the assessment of the site (Dawson 2013) and has truncated the south side of the western ring ditch.
- 4.3.4 The remains of ridge and furrow earthworks have been detected across the whole of the survey area, which may have also potentially masked the presence of less substantial archaeological features. A number of possible soil filled ditches have been detected (3, 4, 7, 8 & 9) the nature of which is uncertain. It is possible that the northernmost features (3 & 8) represent continuations of archaeological features previously excavated to the north of the site. However some of these features may relate to former field boundaries or other agricultural features, as they run parallel with existing boundaries (4, 7 & 9).
- 4.3.5 A number of possible soil-filled features, interpreted as former chalk pits or ponds of possible post-medieval date (5) have been detected by the survey. A further possible field boundary (6) and a former track way or road (10) of likely post-medieval or earlier date have also been detected crossing the proposed development area. Similar features are depicted on the Thanet Tithe Map of c.1840.

5 CONCLUSIONS

5.1 CONCLUSIONS

- 5.1.1 Geomagnetic surveys covering c.23ha of land have been conducted within an arable field to the north of Thorne Farm near Ramsgate, covering the proposed location of a new solar development.
- 5.1.2 Previous archaeological investigations have identified archaeological remains to the north of the site, including activity dating to the prehistoric, Romano-British and medieval periods. The most significant features detected by the geophysical survey comprise two possible ring ditches or small enclosures of likely prehistoric or Romano-British, one of which falls within the northwest corner of the proposed development area.
- 5.1.3 A series of modern features have been detected along the north side of the survey area, including a gas pipeline and drain, which has bisected one of the ring ditches. The remains of medieval ridge and furrow cultivation of likely medieval or post-medieval date has also been detected across the whole of the survey area, which may have disturbed other potential archaeological features at the site.
- 5.1.3 A number of probable post-medieval features have also been detected, a number of which are located within the proposed development area. These include a number of possible chalk pits or ponds, a possible former field boundary and a former trackway or road, Thanet Tithe Map of c.1840 connecting Thorne Farm to the south with the Ridgeway to the north. A number of other undated soil-filled features have been detected, some of which may relate to the agricultural use of the site.

5.2 RECOMMENDATIONS

- 5.2.1 It is recommended that the results of the geophysical surveys are tested through the excavation of a series of trial trenches across the site, targeting both the geophysical anomalies detected, and also testing areas apparently devoid of archaeological features, the nature and extent of which would need to be agreed with the Senior Archaeological Officer at Kent County Council. This would enable suitable mitigation and/or *in situ* preservation to be agreed prior to any development taking place at the site.

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APPENDIX 1: FIGURES

wa-archaeology.com

Wardell Armstrong Archaeology:

CUMBRIA
Cocklakes Yard
Carlisle
Cumbria
CA4 0BQ
Tel: +44 (0)1228 564820

STOKE-ON-TRENT
+44 (0)845 111 7777

CARDIFF
+44 (0)29 2072 9191

EDINBURGH
+44 (0)131 555 3311

GREATER MANCHESTER
+44 (0)1942 260101

LONDON
+44 (0)20 7287 2872

NEWCASTLE UPON TYNE
+44 (0)191 232 0943

SHEFFIELD
+44 (0)114 245 6244

TRURO
+44 (0)1872 560738

WEST BROMWICH
+44 (0)121 580 0909

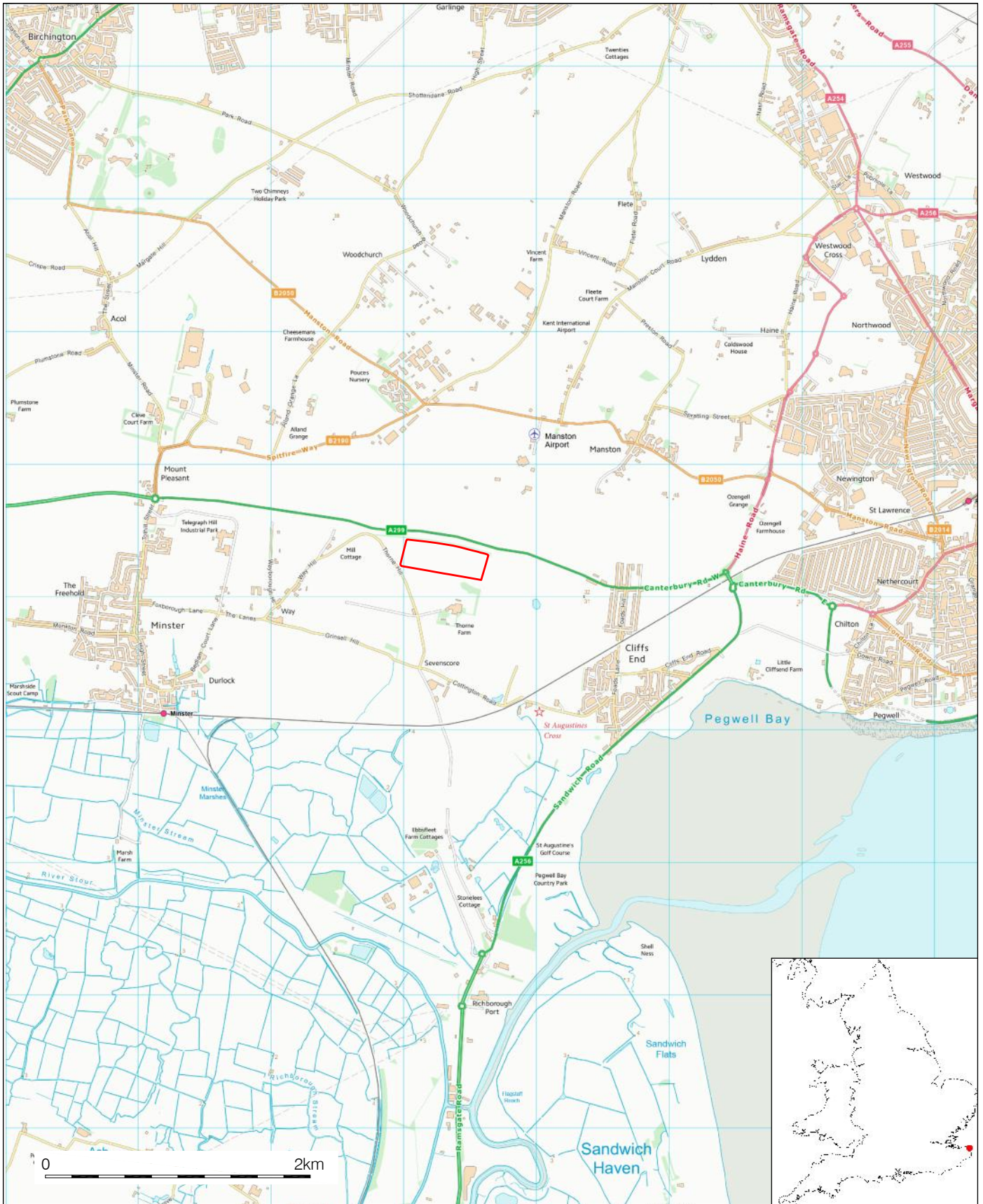
International offices:

ALMATY
+7-727-3341310

MOSCOW
+7 (495) 980-07-67



archaeology






 <p>Wardell Armstrong Archaeology 2013</p>	<p>PROJECT: Land at Thorne Farm, Ramsgate, Kent</p> <p>SCALE: 1:40,000 at A4</p> <p>REPORT No: CP10571</p> <p>CLIENT: Lightsource Renewable Energy Ltd</p> <p>DRAWN BY: AB</p> <p>DATE: September 2013</p> <p>FIGURE: 1</p>	<p>KEY:</p> <p> Site boundary</p>	 <p>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512</p>
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Figure 1: Site location.

PROJECT:

Land at Thorne Farm, Kent

CLIENT:




Lightsource Renewable Energy Ltd

SCALE: 1:3000 at A4

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area
-  Geophysical survey area



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FIGURE: 2

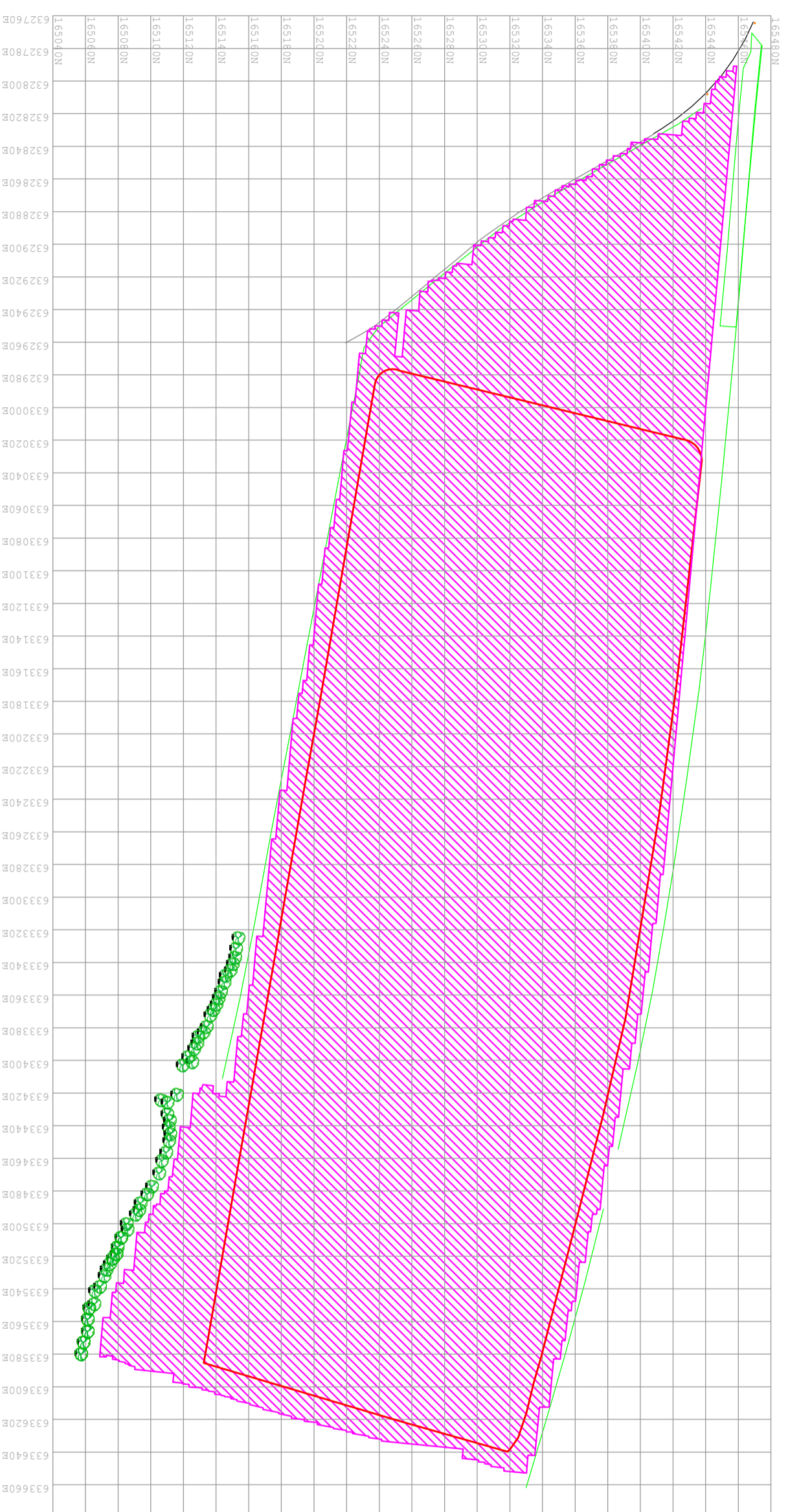


Figure 2: Location of the geophysical survey area

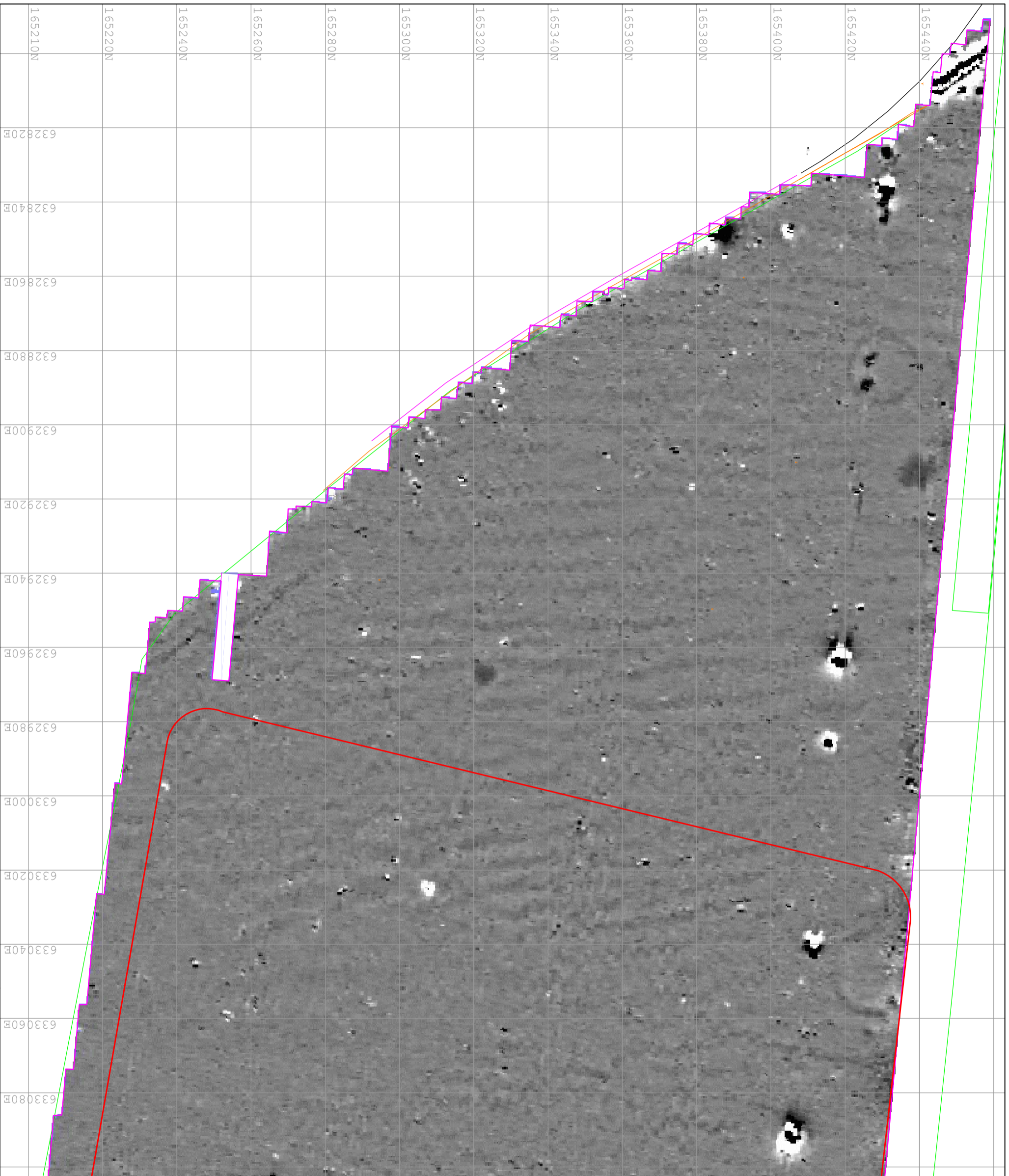


Figure 3: Geophysical survey (western section)



Wardell Armstrong
Archaeology
2013

PROJECT:

Land at Thorne Farm, Kent

CLIENT:



Lightsource Renewable Energy Ltd

SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area



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FIGURE: 3

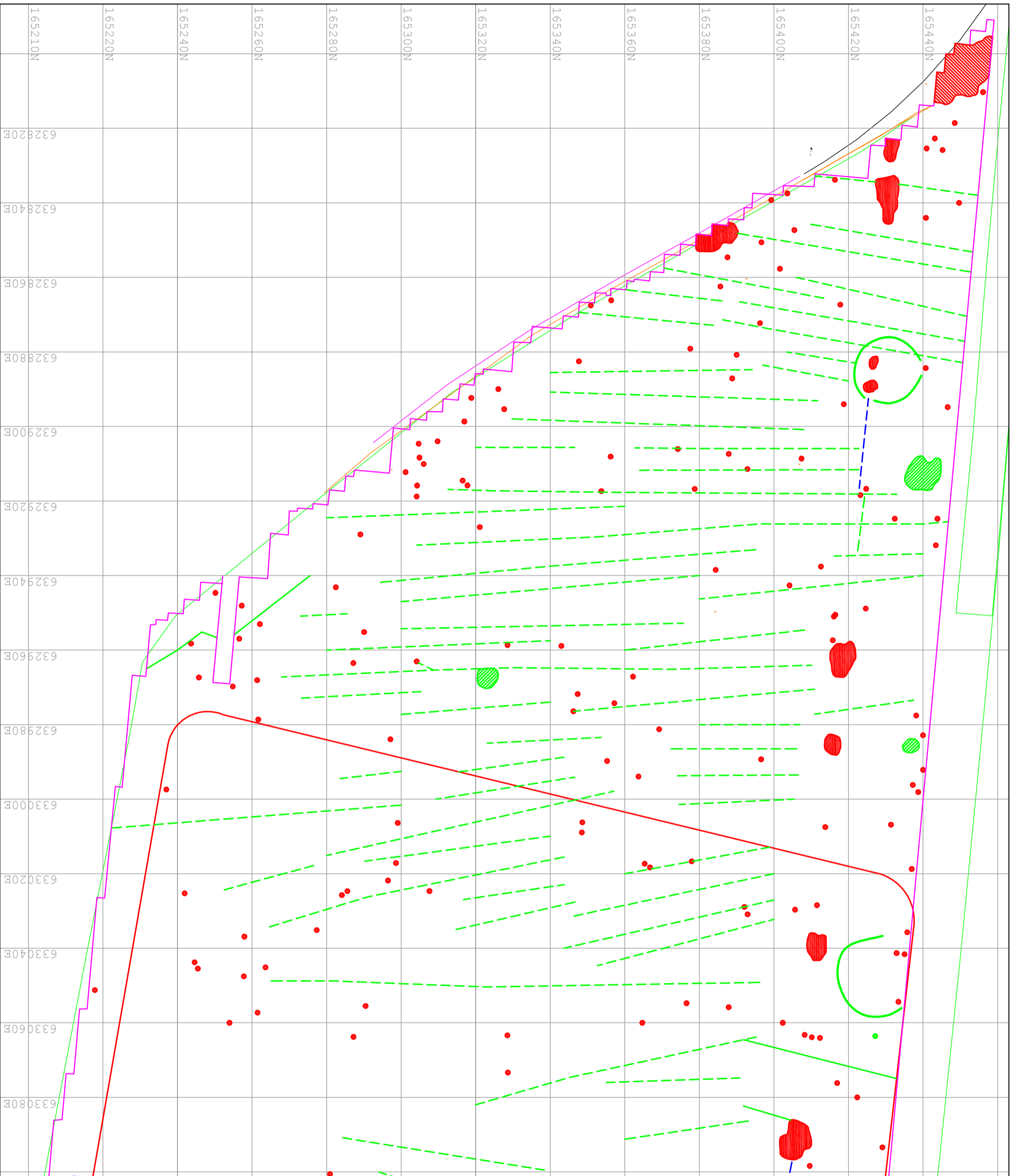


Figure 4: Geophysical interpretation (western section)



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Archaeology
2013

PROJECT:

Land at Thorne Farm, Kent

CLIENT:






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SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area
-  Positive geomagnetic anomaly
-  Negative geomagnetic anomaly
-  Dipolar geomagnetic anomaly



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FIGURE: 4

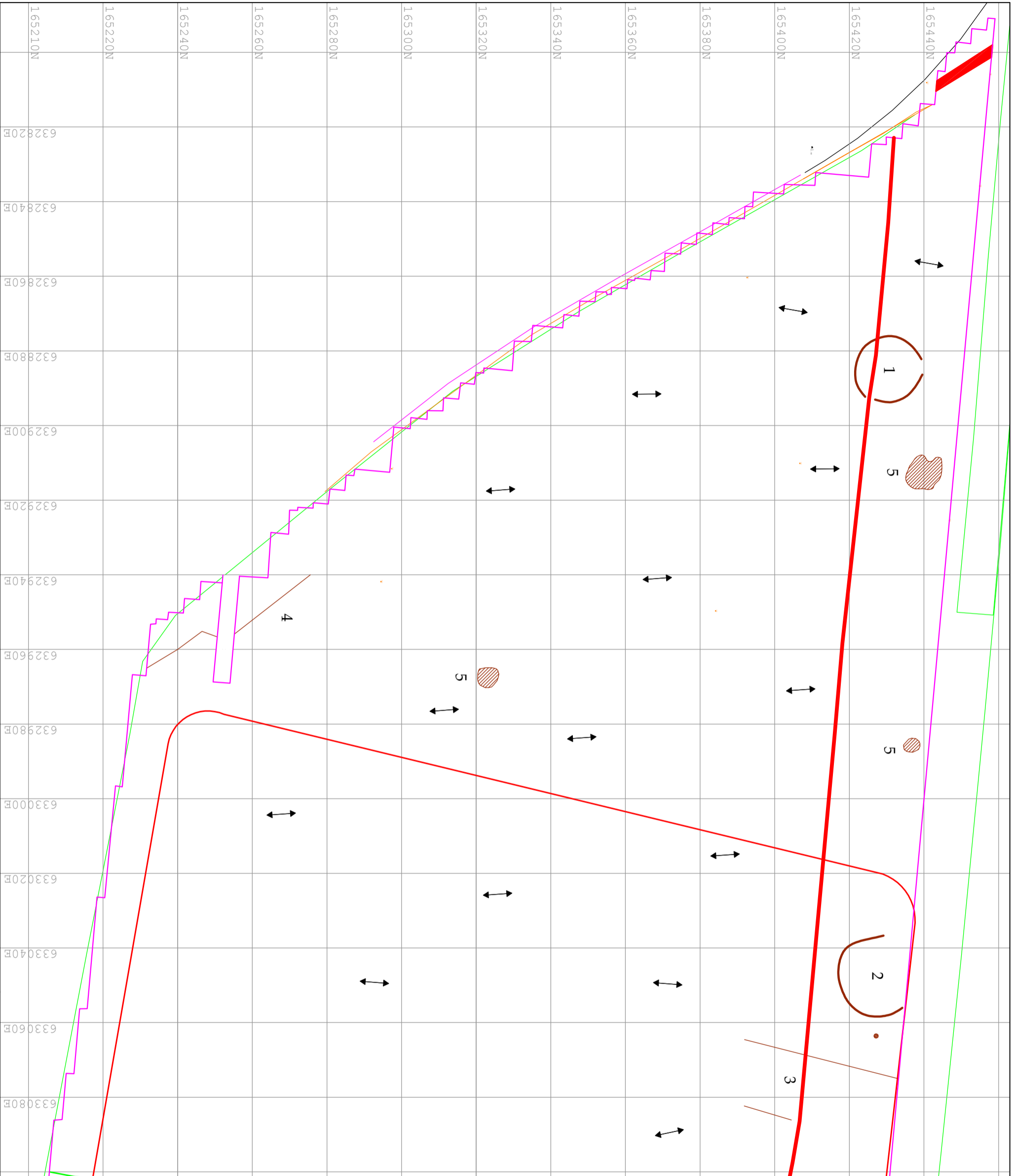


Figure 5: Archaeological interpretation (western section)



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Archaeology
2013

PROJECT:
Land at Thorne Farm, Kent






CLIENT:
Lightsource Renewable Energy Ltd

SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area
-  Service pipe
-  Direction ridge & furrow
-  Possible soil-filled features



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FIGURE: 5

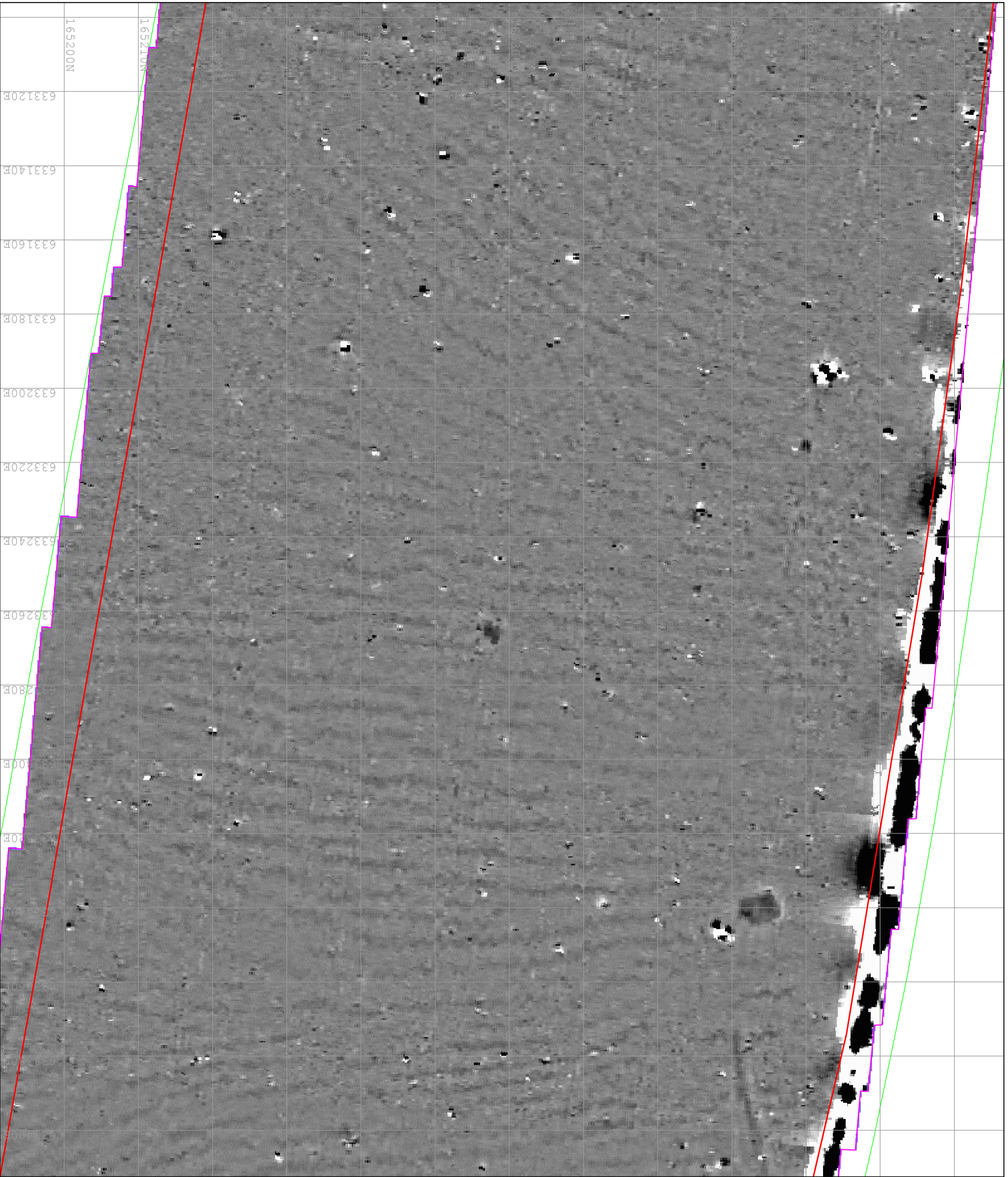


Figure 6: Geophysical survey (central section)



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Archaeology
2013

PROJECT:

Land at Thorne Farm, Kent

CLIENT:



Lightsource Renewable Energy Ltd

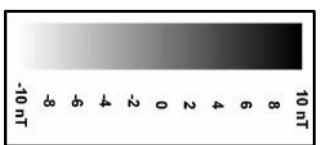
SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area



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FIGURE: 6

PROJECT:

Land at Thorne Farm, Kent

CLIENT:






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SCALE: 1:1000 at A3

DRAWN BY: MDR

DATE: September 2013

KEY:

-  Outline of proposed development area
-  Outline of geophysical survey area
-  Positive geomagnetic anomaly
-  Negative geomagnetic anomaly
-  Dipolar geomagnetic anomaly



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FIGURE: 7

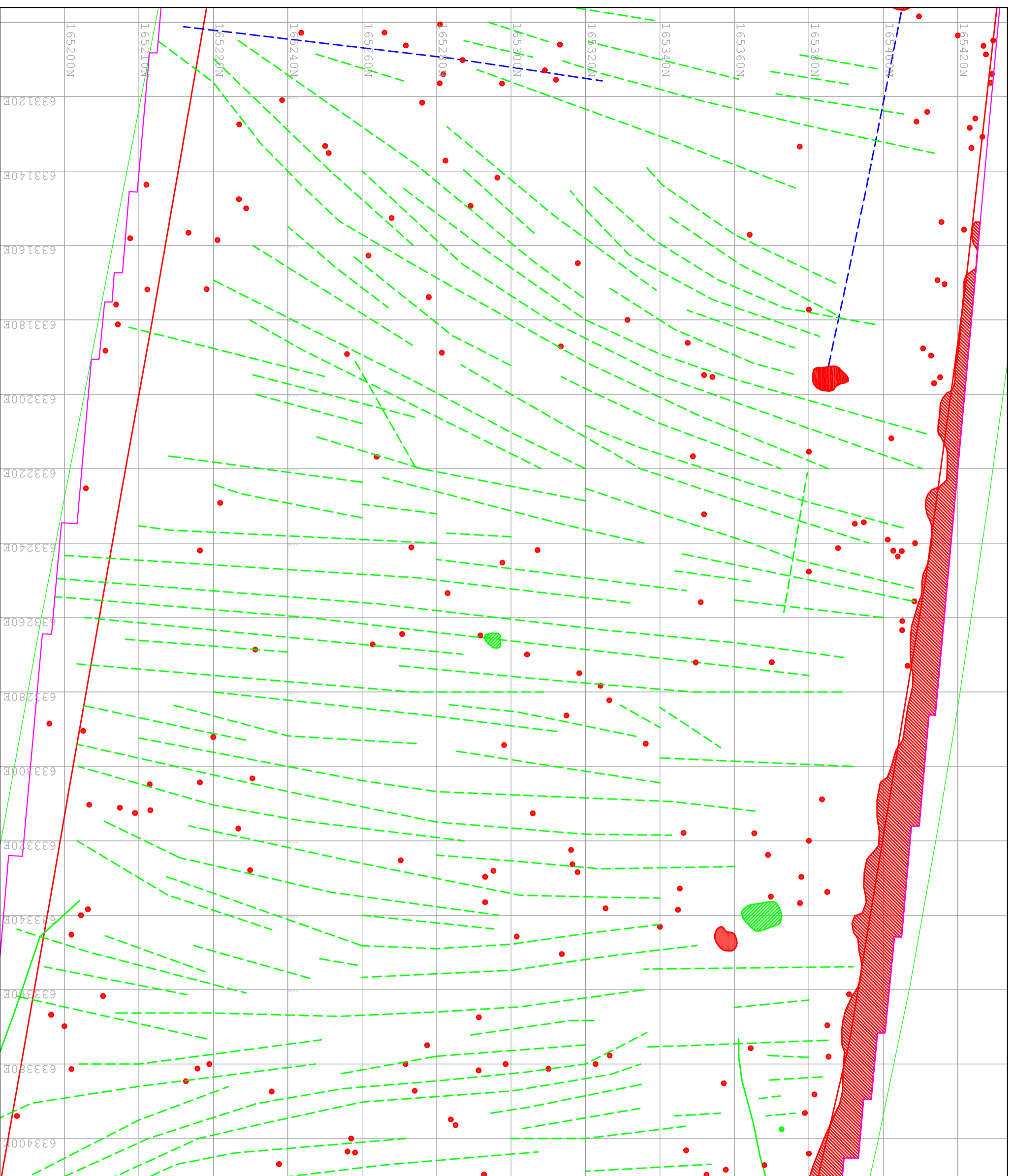


Figure 7: Geophysical Interpretation (central section)

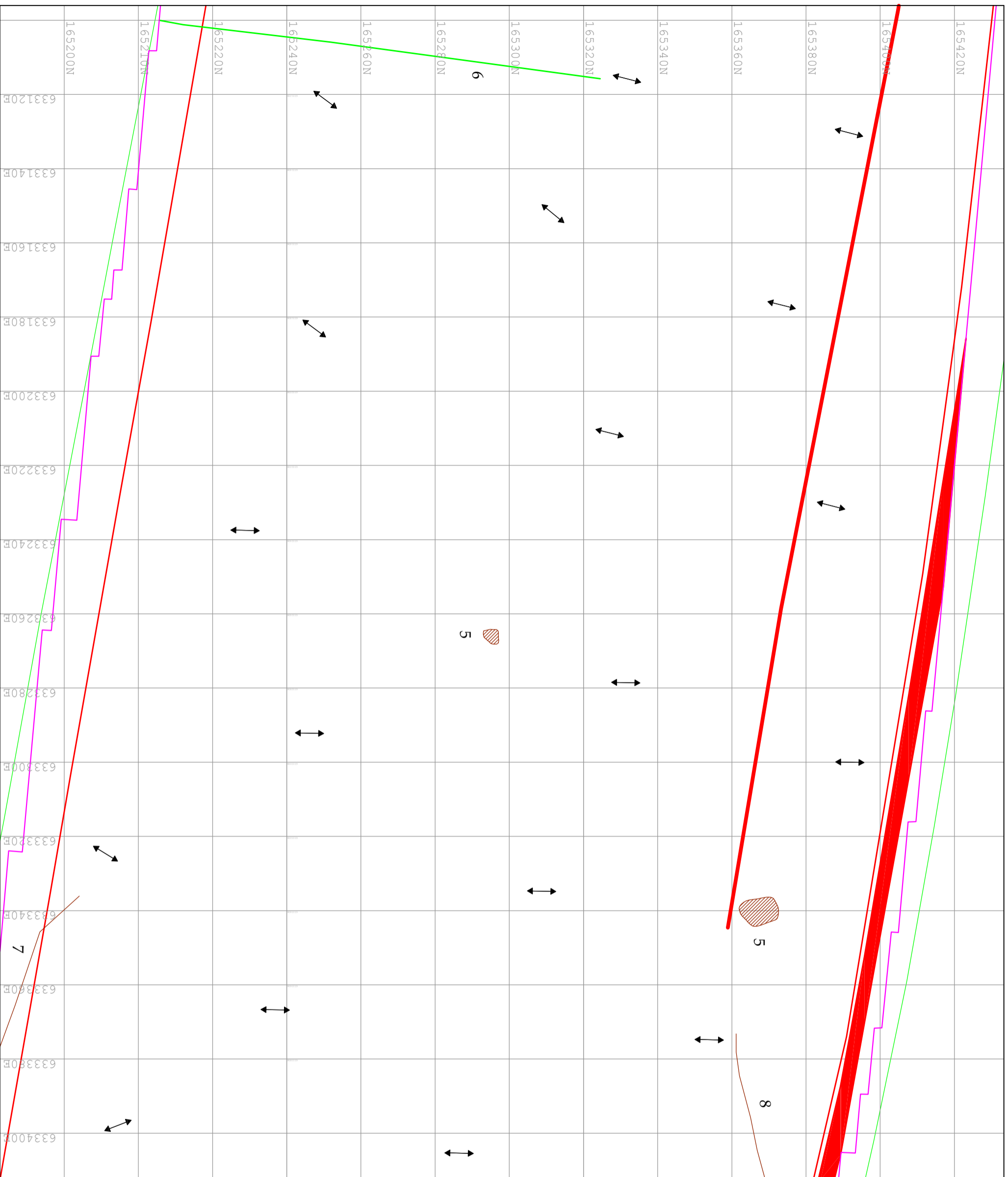


Figure 8: Archaeological Interpretation (central section)



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PROJECT:

Land at Thorne Farm, Kent

CLIENT:







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SCALE: 1:1000 at A3

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KEY:

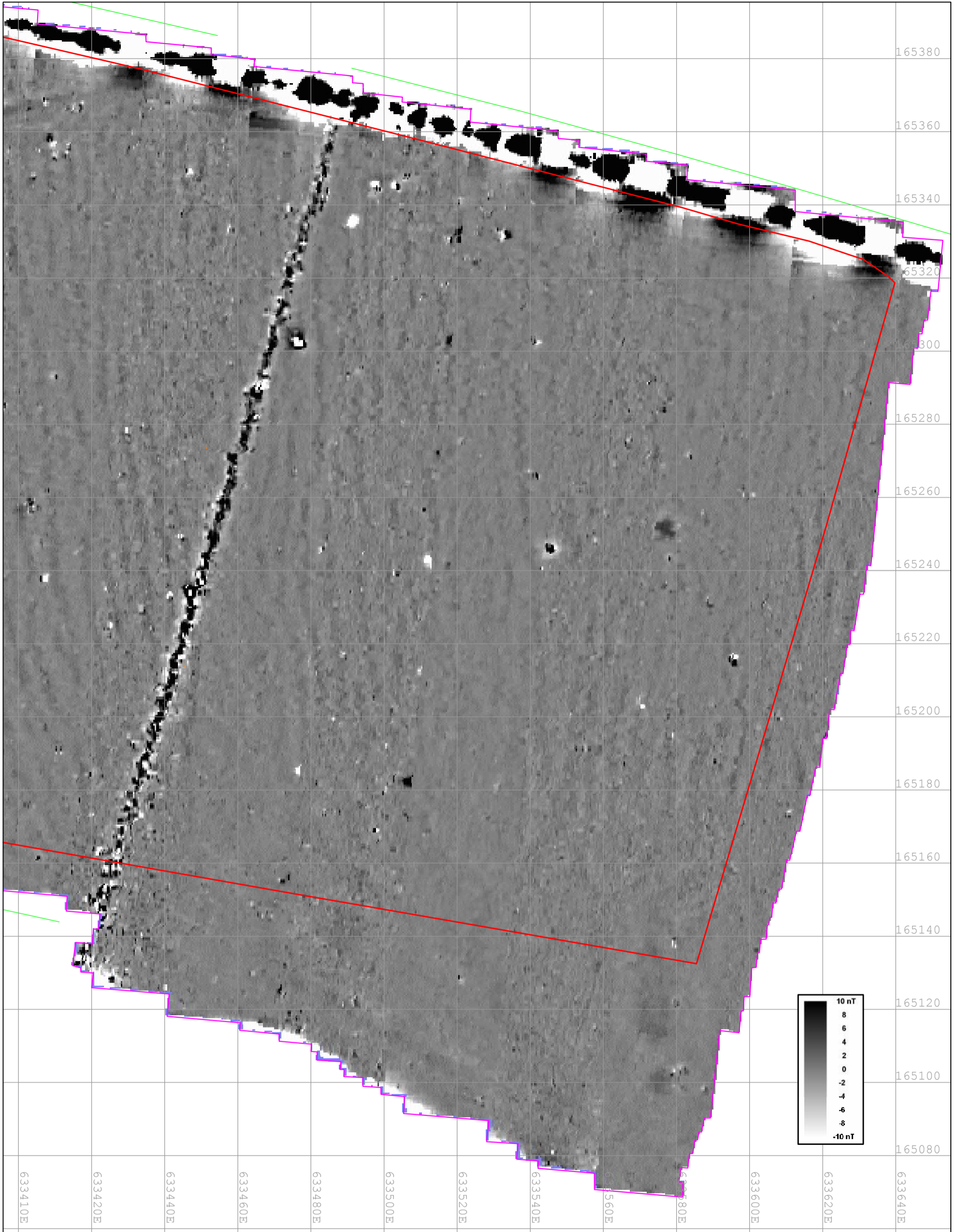
-  Outline of proposed development area
-  Outline of geophysical survey area
-  Service pipe
-  Direction ridge & furrow
-  Possible soil-filled features
-  Possible former field boundary



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FIGURE: 8







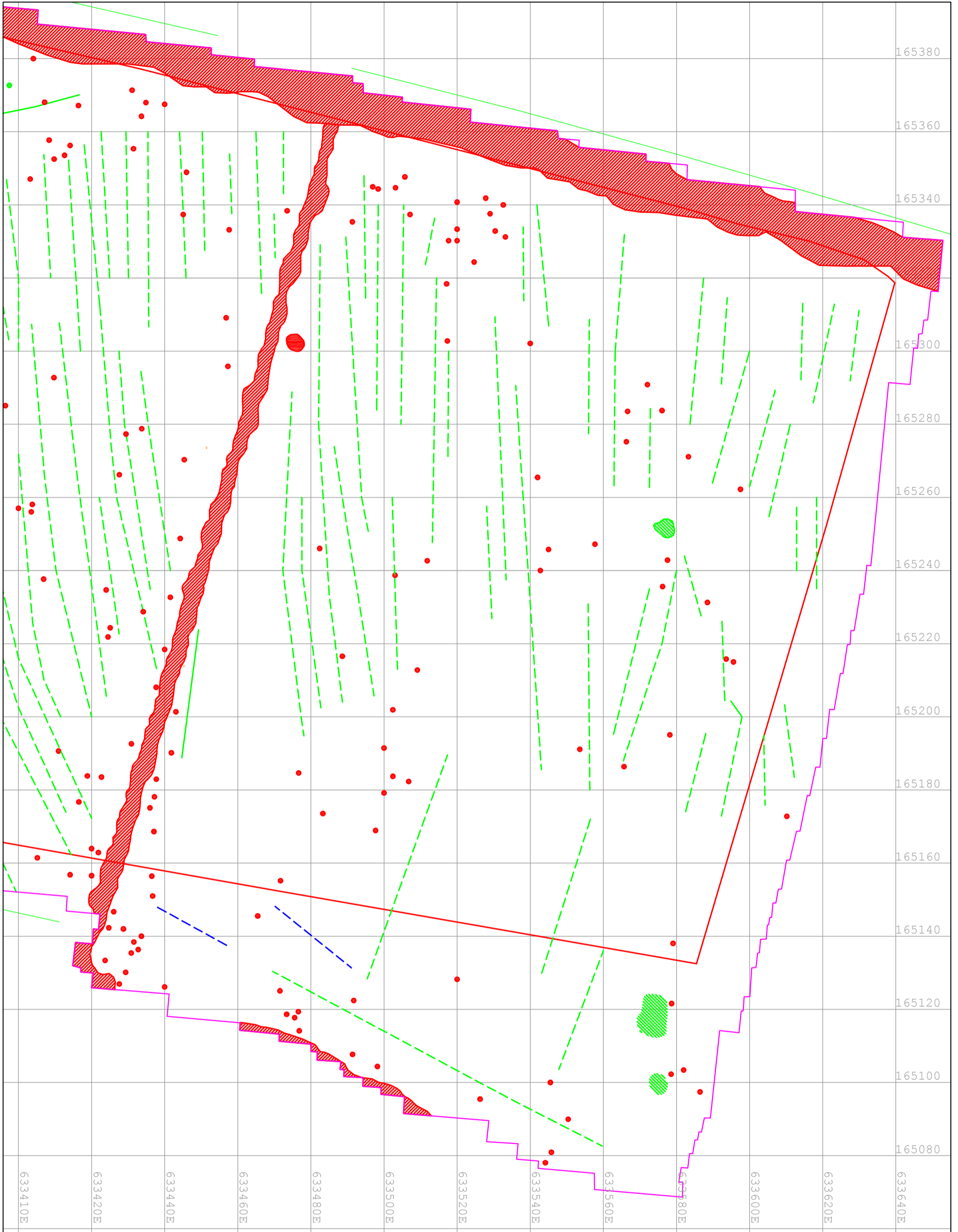
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Figure 9: Geophysical survey (eastern section)










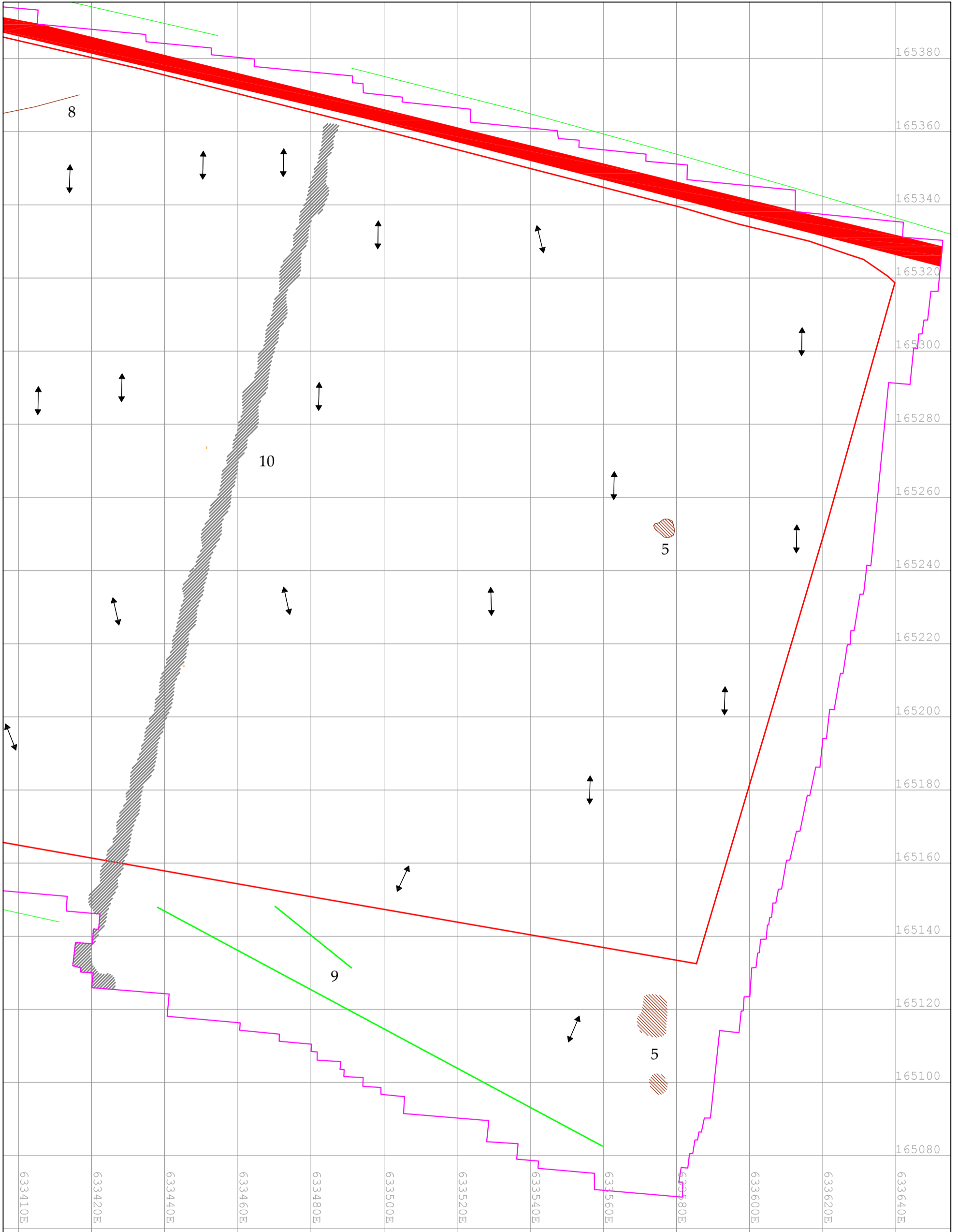
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	CLIENT: Lightsource Renewable Energy Ltd		
	DRAWN BY: MDR		
DATE: September 2013			
FIGURE: 9			

Figure 10: Geophysical interpretation (eastern section)












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DATE: September 2013			
FIGURE: 11			

Figure 11: Archaeological interpretation (eastern section)